DAFTAR PUSTAKA

Abidin, Y. (2016). *Desain sistem pembelajaran dalam konteks kurikulum 2013*. Bandung: PT Refika Aditama.

Achmad, H., & Baradja, L. (2012). *Demonstrasi sains kimia: kimia deskriptif melalui demo kimia Jilid 2*. Bandung: Penerbit NUANSA.

Adams, R.J., & Khoo, S.T. (1996*). Quest: the interactive test analysis system (version 2.1)*. Melbourne: The Australia Council for Educational Research.

Ambusaidi, A., Musawi A.A., Al-Balushi, S., & Al-Balushi, K.(2018). The impact of virtual Lab learning experiences on 9th grade students' achievement and their attitudes towards science and learning by virtual Lab. *Journal of Turkish Science Education, 15*(2), 13-29. doi: 10.12973/tused.10227a.

Anderson, L.W., & Kratwhol, D.R. (1965). *A Taxonom for learning, teaching, and assessing: a revision of Bloom's taxonomy of educational objectives*. New York: David McKay Company, Inc.

Anwar, N., Karim, S., & Effendi, R. (2014). Profil kemampuan inkuiri dan hasil belajar siswa dengan strategi teaching learning sequences dalam inkuiri terbimbing oada materi gaya gesek. *Seminar Nasional Teknologi Pembelajaran, Pascasarjana UM*.

Ardac, D., & Akaygun, S. (2004). Effectiveness of multimedia-based instruction that emphasizes molecular representations on students' understanding of chemical change. *Journal of Research in Science Teaching*, *41*(4), 317–337. doi:10.1002/tea.20005.

Arsyad, A. (2004). *Media pembelajaran*. Jakarta: Raja Grafindo Persada.

Azwar, S. (2015). *Penyusunan skala psikologi*. Yogyakarta: Pustaka Pelajar.

Banchi, H., & Bell, R. (2008). The many levels of inquiry. *Science and Children, 46 (2)*, 26-29. Retrieved from http://www.miseagrant.umich.edu/lessons/files/2013/05/The-Many-Levels-of-Inquiry-NSTA-article.pdf

Bakar, N., Zaman, H.B., Kamalrudin, M., Jusoff, K., & Khamis, N. (2013). An effective virtual laboratory approach for chemistry. *Australian Journal of Basic and Applied Sciences*, 7(3), 78-84. Retrieved from http://www.ajbasweb.com/old/ajbas_Special%20issue_2013.html.

Bloom, B.S. (1956). *Taxonomy of educational objectives: Handbook 1, cognitive domain*. New York: David McKay.

Borg, W.R. & Gall, M.D. (1989). *Educational research: an introduction, fifth edition*. New York: Longman.

Bortnik, B., Stozhko, N., Pervukhina, I., Tchernysheva, A., & Belysheva, G. (2017). Effect of virtual analytical chemistry laboratory on enhancing student research skills and practices. *Reserach in Learning Technology*, *25*, 1-20. doi: http://dx.doi.org/10.25304/rlt.v25.1968.

Brinson, J.R. (2015). Learning outcome achievement in non-traditional (virtual and remote) versus traditional (hands-on) laboratories: A review of the empirical research. *Computers & Education*, 87, 218-237. Doi: http://dx.doi.org/10.1016/j.compedu.2015.07.003

Chang, R. (2005). *Kimia dasar konsep-konsep inti edisi ketiga jilid 2*. Jakarta: Erlangga.

Coffman, T. (2009). *Engaging students through inquiry-oriented learning and technology*. Lanham, MD: Rowman & Littlefield Education.

Cohen, J, (1998). *Statistical power analysis for the behavioral sciences, 2nd ed*. Hillsdale, NJ: Erlbaum.

CNN Indonesia. (24 Juni 2015). Masih banyak siswa dan guru indonesia yang gagap teknologi. Retrieved from https://www.cnnindonesia.com/teknologi/20150624150511-185-62108/masih-banyak-siswa-dan-guru-indonesia-yang-gagap-teknologi.

Demircioglu, G., Demircioglu, H., & Yadigaroglu, M. (2013). An investigation of chemistry students teachers' understanding of chemical equilibrium. *International Journal on New Trends in Education and Their Implications*, *4* (2), 192-199.

Hair, J.F., Black, W.C., Babin, B.J., Anderson, R.E., & Tatham, R.L. (2006). *Multivariate data analysis*. United State of America: Pearson Prentice Hall.

Handayani, Y., Sopandi, W., & Kadarohman, A. (2016). Profil kemampuan berinkuiri siswa SMA pada topik pengaruh perubahan suhu terhadap sistem kesetimbangan kimia. *Jurnal Tadris Kimiya, 1* (2), 38-46. doi: http://dx.doi.org/10.15575/jta.v1i2.1232

Handriani, L.S., Harjono, A., & Doyan, A. (2015). Pengaruh model pembelajaran inkuiri terstruktur dengan pendekatan saintifk terhadap kemampuan berpikir kritis dan hasil belajar fisika siswa. *Jurnal Pendidikan Fisika dan Teknologi*, *1 (3)*, 210-220.

Herga, N.R., Cagran, B., & Dinevski, D. (2016). Virtual laboratory in the role of dynamic visualisation for better understanding of chemistry in primary school. *Eurasia Journal of Mathematics, Science, & Technology Education*, *12*(3), 593-608. doi: 10.12973/eurasia.2016.1224a.

Jeschke, S., Richter, T., & Zorn, E. (2010). Virtual labs in mathematics and natural sciences. *International Conference on Technology Supported Learning & Training: Online Educa Berlin*. Retrieved from: http://www.ibi.tuberlin.de/diskurs/veranst/online_educa/oeb_04/Zorn%20TU.pdf

Jihad, A., & Haris, A. (2008).*Evaluasi pembelajaran*. Yogyakarta: Multi Press.

Kambeyo, L. (2017). The possibilities of assessing students' scientific inquiry skills abilities using an online instrument: a small-scale study in the omusati region, namibia. *European Journal of Educational Sciences, 4*(2), 1-21. doi: 10.19044/ejes.v4no2a1.

Kean, E., & Catherine, M. (1985). *Panduan belajar kimia dasar*. Jakarta: Gramedia.

Kennepohl, D. (2001). Using computer simulations to supplement teaching lab in chemistry for distance delivery. *The Journal of Distance Education, 16*(2), 58–65. Retrieved from http://ijede.ca/index.php/jde/article/view/178/124

Kirschner, P., & Huisman, W. (1998). Dry laboratories in science education: computer-based practical work. *International Journal of Science Education*, *20*(6), 665-682. doi: 10.1080/0950069980200605.

Kuhlthau, C.C., Maniotes, L.K., & Caspari, A.K. (2007).*Guided inquiry: learning in the 21st century*. United States of America: Libraries Unlimited. Retrieved from http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.464.4579&rep=rep1&type=pdf.

Kustandi, C., & Sutjipto, B. (2011). *Media pembelajaran manual dan digital*. Bogor: Ghalia Indonesia.

Leal, S., & Leal, J.P. (2013). One example of a chemistry e-lab experiment: chemical equilibrium reaction. *International Journal of Online Engineering*, *9* (8). doi.10.3991/ijoe.v9iS8.3380.

Lou, Y., Blanchard, P., & Kennedy, E. (2015). Development and validation of a science inquiry skills assessment. *Journal of Geoscience Education*, *63*(1), 73-85. doi: 10.5408/14-028.1.

Lukac, S. (2015). Stimulation of the development of inquiry skills in teaching functions. *ICTE Journal*, *4*(4), 4-18. doi: 10.1515/ijicte-2015-0016.

Ma, J., & Nickerson, J. V. (2006). Hands-on, simulated, and remote laboratories: a comparative literature review. *ACM Computing Surveys*, *38*(3), 1-24. doi: 10.1145/1132960.1132961

Magwilang, E.B. (2016). Teaching chemistry in context: its effects on students' motivation, attitudes and achievement in chemistry. *International Journal of Learning, Teaching, and Educational Research*,*15*(4), 60-68. Retrieved from https://www.ijlter.org/index.php/ijlter/article/view/670/289.

Majid, A. (2017). *Penilaian autentik proses dan hasil belajar*. Bandung: PT Remaja Rosdakarya.

Menteri Pendidikan dan Kebudayaan Republik Indonesia. (2016). *Peraturan Menteri Pendidikan dan Kebudayaan Nomor 22 Tahun 2016 tentang Standar Proses Pendidikan Dasar dan Menengah*.

Minner, D.D., Levy, A.J., & Century, J. (2010). Inquiry-based science instruction-what is it and does it matter? results from a research synthesis years 1984 to 2002. *Journal of Research in Science Teaching*, 47, 1-24. doi: 10.1002/tea.20347.

Mulatsih, B. (2018). Peningkatan keaktifan dan hasil belajar siswa dalam pembelajaran kimia melalui model pembelajaran kooperatif tipe Teams Games Tournaments (TGT), *Prosiding Seminar Nasional Pendidikan*.

Mumba, F., Chabalengula, V.M., & Wise, K. (2007). Analysis of new zambian high school physics syllabus and practical examinations for levels of inquiry and inquiry skills. *Eurasia Journal of Mathematics, Science & Technology Education, 3*(3). 213-220. doi: https://doi.org/10.12973/ejmste/75400.

Munir. (2013). *Multimedia dan konsep aplikasi dalam pendidikan*. Bandung: Penerbit Alfabeta.

National Research Council. (1996). *National science education standards*. Washington, DC: National Academy Press.

Ngaliman, Fauzani, M., & Salabi, A. (2016). *Strategi dan model pembelajaran*. Yogyakarta: Aswaja Pressindo.

Oliver, R. (2007). Exploring an inquiry-based learning approach with first-year students in a large undergraduate class. *Innovations in Education and Teaching International*,44, 3-15. doi: 10.1080/14703290601090317.

Oidov, L., Tortogtokh, U., & Purevdagva, E. (2012). Virtual laboratory for physics teaching. In *Proceedings of the International Conference on Management and Education Innovation, IPEDR, 37,* 319-323. Retrieved from: http://www.ipedr.com/vol37/062-ICMEI2012-E10015.pdf

Pekdag, B. (2010). Alternative methods in learning chemistry: learning with animation, simulation, video and multimedia. *Journal of Turkish Science Education,7*(2), 111-118. Retrieved from http://www.tused.org/internet/ tused/archive/v7/i2/text/tusedv7i2a5.pdf.

Prince, M., & Felder, R.M. (2007). The many faces of inductive teaching and learning. *Journal of College Science Teaching,* 36, 14-20. Retrieved from http://www4.ncsu.edu/unity/lockers/users/f/felder/public/Papers/Inductive(JCST).pdf.

Purwanto. (2011). *Evaluasi hasil belajar*. Yogyakarta: Pustaka Belajar.

Pardo, J.P., & Portoles, J.J.S. (1995). Students' and teachers' misapplication of Le Chatelier's principle: Implications for the teaching of chemical equilibrium. *Journal of Research in Science Teaching, 32*, 939-957. doi: 10.1002/tea.3660320906.

Rusman. (2012). *Belajar dan pembelajaran berbasis komputer mengembangkan profesionalisme abad 21*. Bandung: Alfabeta.

Salvucci, S., Walter, E., Conley, V., Fink, S., & Saba, M. (1997). *Measurement error studies at the National Center for Education Statistics (NCES)*. Washington D. C.: U. S. Department of Education. Retrieved from https://nces.ed.gov/pubs97/97464.pdf

Sani, R.A. (2014). *Inovasi pembelajaran*. Jakarta: Bumi Aksara.

Santoso, S. (2017). *Statistik multivariat dengan SPSS*. Jakarta: PT Gramedia.

Sirhan, G. (2007). Learning difficulties in chemistry: an overview. *Journal of Turkish Science Education*, *4*(2), 5. Retrieved from http://www.tused.org /internet/tufed/arsiv/v4/i2/metin/tusedv4i2s1.pdf.

Solikhin, F. (2018). Pengembangan laboratorium virtual kimia terintegrasi dalam pembelajaan hibrid untuk meningkatkan prestasi belajar dan efikasi diri pada materi elektrokimia. *Tesis*, Yogyakarta: Universitas Negeri Yogyakarta.

Solomonidou, C., & Stavridou, H. (2001). Design and development of a computer learning environment on the basis of students' initial conceptions and

learning difficulties about chemical equilibrium. *Education and Information Technologies, 6*(1), 5-27. doi: 10.1023/A:1011359010331.

Sudjana, N. (2012). *Dasar-dasar proses belajar mengajar*. Bandung: Sinar Baru Algesindo.

Sutopo, Y., & Slamet, A. (2017). *Statistika inferensial*. Yogyakarta: Penerbit ANDI.

Syukri, S. (1999). *Kimia dasar 2*. Bandung: ITB.

Treagust, D.F., & Chittleborough, G. (2001). Chemistry: a matter of understanding representations. *Subject-Specific Instructional Methods and Activities*, *8*(I), 239-267. doi:10.1016/s1479-3687(01)80029-8.

Tyson. L., Treagust, D.F., & Bucat, R. (1999). The complexity of teaching and learning chemical equilibrium. *Journal of Chemical Education*, *76*(4), 554-558. doi: 10.1021/ed076p554.

Tresna, S. (1998). *Proses belajar mengajar kimia*. Jakarta: Depdikbud.

Trisanti, D.C., & Sanjaya, I.G.M. (2013). Pengembangan media permainan stoichio game pada materi pokok konsep mol bagi siswa SMA sekolah berstandar internasional. *Unesa Journal of Chemical Education, 2*(II),181-187.

Tuysuz, C. (2010). The effect of the virtual laboratory on students' achievement and attitude in chemistry. *International Online Journal of Educational Sciences*, *2*(1), 37-53.

Wenning, C.J. (2007). Assessing inquiry skills as a component of scientific literacy. *J. Phys. Tchr. Educ. Online, 4*(2), 21-24.

Widoyoko, E.P. (2018). *Penilaian hasil pembelajaran di sekolah*. Yogyakarta: Pustaka Pelajar.

Winkelmann, K., Baloga, M., Marcinkowski, T., Giannoulis, C., Anquandah, G., & Cohen, P. (2015). Improving students' inquiry skills and self-efficacy through research-inspired modules in the general chemistry laboratory. *Journal of Chemical Education*, doi: doi.org/10.1021/ed500218d

Woodfield, B. (2005). Virtual chemlab getting started. Pearson Education website. Retrieved from http://www.mypearsontraining.com/pdfs/VCL_getting_started.pdf

Wu, H.K., & Hsieh, C. (2006). Developing sixth graders' inquiry skills to construct explanations in inquiry-based learning environments.

International Journal of Science Education, *28*(11). 1289-1313. doi: 10.1080/09500690600621035.

Yulianti, D., Khanafiyah, S., & Sugiyanto. (2012). Penerapan virtual experiment berbasis inkuiri untuk mengembangkan kemandirian mahasiswa. *Jurnal Pendidikan Fisika Indonesia*, *8*, 127-134. doi:10.15294/jpfi.v8i2.2152.

Zulfiani, Z., & Herlanti, Y. (2018). Scientific inquiry perception and ability of pre-service teachers. *Journal of Turkish Science Education*, *15*(1), 128-140. doi: 10.12973/tused.10225a.